American Electronics

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Model 95-130

3-function test instrument

introduction

Your new 95-130 test instrument is a compact 3-function test meter designed to indicate the condition of any 52 ohm CB antenna system and transmitter. (see Specifications) by testing for Standing Wave Ratio, relative RF power, or field strength. Tuning of transmitters can also be accomplished when using this meter as a field strength meter. Also, comparing antennas can be accomplished with this meter. It is designed to be used for base stations or mobile operations and can be permanently installed in the antenna system without any measurable loss of power.

specifications

SWR. . . . . .1:1 to 3:1
RF power . . . . . .0-10 watts
Impedance . . . . . . .52 ohms

Meter . . . . 100 micro-amp DC
Connectors. So-239
Size . . . . . . 2¼"H x 2½"W x 2½"D

swr function

The SWR Function of the test instrument is probably the most useful test performed. Testing for the SWR or Standing Wave Ratio provides the operator of the transmitter a good indication of the condition of his antenna and antenna lead cable since most antennas are located externally of the transmitter. In order to get the maximum amount of power radiated from the antenna, the lead line or coax and the antenna should be matched to the transmitter. Because a perfect match is never achieved the amount of mismatch can be measured by measuring the amount of Standing Waves that exist in the coax or antenna feed-line. Measuring the Standing Waves can be accomplished by sampling the forward "FWD" power and the reflected "REF" power and comparing them and then expressing this difference as a ratio of reflected power to forward power. The following ratios are examples of the amount of power loss for a Standing Wave Ratio.

POWER LOSS		SWR	POWER LOSS		SWR
0%	=	1:1	11%	=	2:1
2%	=	1.3:1	25%	=	3:1
3%	=	1.5:1	38%	=	4:1
6%	=	1.7:1	48%	=	5:1
			70%	=	10:1

A ratio of from 1.1:1 to a 2:1 is usually considered satisfactory for most operations.

power meter function

The power meter function is provided to monitor the condition of the transmitter by measuring the relative RF power being generated in the transmitter. This meter will measure up to 10 watts of RF power. This accomplished by sampling a small amount of RF energy from the transmission line.

field strength function

This meter will function as a small receiver and detect energy radiated from the radio antenna. Energy picked up by small whip antenna is detected by 2 diodes and controlled by the SWR adjustment control. It must be disconnected from the antenna feed line and placed close to, but not touching the radio antenna for this test.

installation for swr and power measurements

To use this meter as a Standing Wave Ratio meter or as an RF power meter it must be connected in the antenna feed line. To do this, a short length of coaxial cable is required preferably no longer than 2 feet, such as American Electronics' 91-044.

With the transmitter off, disconnect the coax from the transmitter and connect that coax to the end of the SWR power meter marked ANT. Connect the short length of coax between the transmitter and the end of the SWR power meter marked TRANS. This meter can be installed permanently for SWR or power meter operation.

swr measurement

CAUTION: DO NOT TURN THE TRANSMITTER ON WHILE THE ANTENNA AND TEST METER ARE DISCONNECTED!

1. With the meter properly connected and the transmitter off, place the slide switch in the SWR forward position.
2. Key to the transmitter and adjust the SWR adjustment control for a full scale deflection to the "SET" mark on the meter.
3. While the transmitter is on, place function switch in the SWR reflected position and read the SWR off the "SWR" scale.

NOTE: IF THE SWR IS ABOVE 2:1 THE ANTENNA MAY NEED TUNING OR THERE MAY BE A PROBLEM IN THE ANTENNA SYSTEM.

4. Several antennas provide a means for tuning by either a slide adjustment or a control at the base. For sliding antennas, sliding ¼" each time and repeating the SWR measurement steps after each adjustment is usually a good method. First, moving the antenna inward and watching for an improvement in the SWR; then, outward if no improvement is noticed. For Citizens Band operations, use one of the center channels to tune on.

power measurement

CAUTION: DO NOT TURN THE TRANSMITTER ON WHILE THE ANTENNA AND TEST METER ARE DISCONNECTED!

1. Connect the meter in the antenna feed in the same manner as for the SWR measurement.

NOTE: FOR ACCURATE POWER READINGS. THE SWR SHOULD BE NO HIGHER THAN 1.5:1.

2. Place the slide switch in the up or "POWER" position.
3. Turn the transmitter on and read the power from the top scale.

CAUTION: ABNORMALLY HIGH READINGS OR READINGS ABOVE THE RATED POWER OF THE TRANSMITTER COULD INDICATE A FAULTY ANTENNA SYSTEM. CHECK ALL CONNECTORS FOR TIGHTNESS OR CORROSION.

field strength measurement

1. For field strength indications, the meter must be disconnected from the antenna lead coax and placed near the radio antenna. The small antenna provided with this instrument must be installed on the connector provided on the back of the meter. Be sure that the antenna of the radio is connected before transmitting. DO NOT TOUCH THE SMALL WHIP ANTENNA TO THE RADIO ANTENNA.
2. Set the slide switch to SWR forward positon.
3. Turn the transmitter on and adjust the SWR adjustment control for an indication on the meter. It may be necessary to re-position the meter to obtain an indication.
4. After a good location has been determined for the meter, tune your transmitter and antenna for maximum deflection of the meter.

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